I. C. 6864 DECEMBER 1935

DEPARTMENT OF THE INTERIOR

UNITED STATES BUREAU OF MINES
JOHN W. FINCH, DIRECTOR

INFORMATION CIRCULAR

ACCIDENTS IN TENNESSEE COAL MINES

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BY

FRANK E. CASH

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DEPARTMENT OF THE INTERIOR - BUREAU OF MINES

ACCIDENTS IN TENNESSEE COAL MINES, 1932-34[1]

By Frank E. Cash[2]

The work of the United States Bureau of Mines is concerned primarily with the prevention of accidents in the mining, petroleum, and allied industries. This report analyzes the fatal accidents in the coal mines of Tennessee and gives the pertinent factors in tabular and descriptive form, with interpretations and suggestions to operators, workers, and the State Division of Mines for the future prevention or reduction of accidents in coal mines.

ACKNOWLEDGMENTS

This study was made possible through the cooperation of A. W. Evans, chief mine inspector of Tennessee, and his secretary, Miss Hiliary Penny, who made available the department records and assisted in the segregation and assembly of the data.

Figures covering coal-mine accidents before 1932 were taken from United States Bureau of Mines bulletins; those for 1932, 1933, and 1934 were furnished by the Division of Mines, Tennessee Department of Labor.

PRODUCTION, EMPLOYMENT, AND ACCIDENTS IN TENNESSEE COAL MINES, 1915-34

Table 1 gives production, employment, and accident figures by years from 1925-34, inclusive, and the average for the 10-year period 1915-24. A comparison of the two 10-year periods shows that the fatal-accident experience based on tonnage and exposure was worse during 1925-34 than during 1915-24. Even if the explosion in the Rockwood mine, which resulted in the death of 27 men, had not occurred the experience during the past 10 years would not have been quite as good as in the preceding 10 years.

ACCIDENTS

This report discusses in detail the accidents that occurred in Tennessee coal mines during the 3 years 1932-34, inclusive.

In 1932 the coal mines of Tennessee, as well as those of the United States as a whole, had their best accident experience on record. The State Division of Mines has a record of all compensable accidents, that is, fatalities and total permanent, partial permanent, and temporary injuries causing the loss of more than 7 days.

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TABLE 1. - Production, number of employees, and accidents in Tennessee coal mines, 1925-34

Year	Production	Number of mines	Days active	Employees	Fatal accidents	Compensable nonfatal accidents	Fatality rate per million tons	Fatality rate per million man-hours	Tons per fatality
1925	5,454,011	132	211	8,314	26	174	4.77	1.82	209,770
1926	5,788,741	133	234	7,948	50	232	8.64	3.33	115,775
1927	5,783,367	111	235	7,691	17	194	2.94	1.15	340,139
1928	5,610,959	116	226	7,849	18	155	3.21	1.24	311,719
1929	5,405,464	81	228	7,619	20	121	3.70	1.40	270,273
1930	5,130,428	79	196	7,535	22	131	4.29	1.82	233,201
1931	4,721,548	83	179	7,448	17	265	3.60	1.56	277,738
1932	3,537,882	75	148	6,827	9	134	2.54	.97	393,098
1933	3,709,405	119	130	6,742	14	252	3.78	2.28	264,958
1934	4,104,910	134	137	7,019	21	323	5.11	3.13	195,472
Ave. 1925-34	4,924,671	---	192	7,499	21.4	198	4.26	1.87	231,554
Ave. 1915-24	5,670,635	---	206	10,455	21.0		3.70	1.21	270,013

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TABLE 2. - Fatal and compensable nonfatal accidents by causes, 1932-34

Cause	1932		1933		1934		Total	
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
Falls of rock and coal	4	41	9	70	14	68	27	179
Haulage	4	35	3	83	2	104	9	222
Electricity	1	7	1	3	1	4	3	14
Falls of persons	0	6	0	7	2	25	2	38
Machinery	0	3	0	15	1	16	1	34
Explosives	0	0	0	6	1	2	1	8
Asphyxiation by mine fire	0	0	1	0	0	0	1	0
Handling material	0	19	0	26	0	50	0	95
Flying objects	0	4	0	22	0	16	0	42
Pushing cars	0	9	0	11	0	8	0	28
Tools	0	7	0	8	0	26	0	41
Gas ignitions	0	2	0	1	0	3	0	6
Total	9	133	14	252	21	322	44	707

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CAUSES OF ACCIDENTS

Table 2 tabulates by years and causes the fatal and compensable nonfatal accidents for the 3-year period 1932-34, inclusive.

Falls of coal and rock were responsible for the greatest number of fatal accidents, with haulage second, electricity third, and falls of persons fourth; mine fires caused 1 death in 1932 and machinery and explosives 1 each in 1934.

The order is not the same for compensable nonfatal accidents; haulage leads, followed by falls of rock and coal, handling material, flying objects, tools, falls of persons, machinery, pushing cars, electricity, explosives, and gas ignitions in the order mentioned.

Grouping of fatal accidents for the 3 years according to mines reveals that 1 mine had 4 fatalities, 1 had 3, 9 had 2, and 19 had 1 each; the remaining mines, ranging from 45 to 104 according to number in operation, had no fatalities. The mines reporting 1 or more fatalities produced only 2,922,806 tons (25.75 percent) during the 3 years of a total of 11,352,197 tons of coal produced.

CAUSES OF FATALITIES

Although data on fatal accidents are not complete each coal-mine fatality will be described as closely as the data will permit and possible means of prevention will be suggested.

The statistical data on accidents are taken from the Tennessee Division of Mines reports, and the details are quoted from reports of the State inspector (where available) and the superintendent or manager of the Workmen's Compensation Division.

Falls of Rock and Coal

1. A white miner 43 years old, with 25 years' mining experience, was killed by a fall of slate. He was married but had no children.

> The place had just been cut, and in loading the machine the safety post was knocked out and not reset by the machine crew. The deceased entered the place and in all probability did not examine the roof. A piece of slate 9 feet by 6 feet by 2½ feet thick at the face, and tapering to a featheredge back in the entry, broke at the face, killing the miner.

The miner should have examined and made the roof safe before he went under it, the machine crew should have reset the post knocked out, and the management should have required both precautions from its employees.

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2. A white miner 49 years old, with 1½ years' mining experience, was killed by a fall of slate. He was married and had 4 children.

> The deceased was loading coal in a room when 12 to 15 tons of rock (horseback) fell, killing him. This seems to be another case where a safety post or posts might have saved a life. Prior to the accident no systematic timbering rules were established or enforced.

Safety rules should be established covering testing and taking down or timbering roof, especially in a mine where rolls or "horsebacks" are encountered; the mine foreman should see that the rules are enforced, and the miner should test and make the roof safe.

3. A negro miner 30 years old, 1 year's mining experience, was killed by a fall of slate in an entry. He was married but had no children.

> The entry was 9 feet wide, and a piece of slate 6 feet by 3 feet by 15 inches thick, with slips near each rib, fell on the deceased's head and shoulders, breaking his neck and jaw. There was one safety post under the rock when it gave way and rode the timber.

Responsibility rests jointly on the supervisor and the miner; the rock should have been taken down or timbered more securely.

4. A white miner 22 years old, single, with 5 years' mining experience, was killed by a fall of rock.

> The deceased was working with his father pulling room pillars. The roof had been "working" the previous day, and the foreman instructed the 2 men to move toward the entry about 15 feet, shoot the pillar, and work toward the working top. This was on August 10, and on August 11, due to boiler-water shortage, the foreman remained on the surface and the miners went to their working places. The father started drilling at the point designated by the foreman, and the son, or deceased, came in the mine later and started digging coal inby the father, and a piece of slate 10 feet by 2½ feet by 6 inches thick fell on his head and shoulders, breaking his neck and causing internal injuries which resulted in his death before reaching the hospital. The accident was avoidable, as the draw slate was exposed along the rib, and should have been taken down or timbered with 2 or 3 posts. If the slate had been tested, it would have sounded "drummy." Closer supervision by bosses and closer attention to the roof condition are recommended.

The men should not have been allowed to enter the mine without someone in a supervisory capacity in the mine or with the men. This place should have been examined by the foreman before the men went to work, as he knew the place was unsafe the previous day.

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5. A white miner 60 years old was killed by falling slate.

In a recently reopened mine which had not been operated for 23 years, the deceased, assisted by his son, was drawing entry stumps. The son was turning the coal and the father was loading it into the car when the roof fell the width of the entry, 5 feet wide and 2 feet thick, killing the father. Although the rock was too heavy to have sounded "drummy" the accident was caused by removing the coal and not setting timbers to support the roof. Timbers should have been set as the coal was removed.

The miner was a "contractor", that is, mined coal on a royalty basis, and was responsible for his own safety; but, like many other experienced miners when not forced by some supervisory authority, he failed to take adequate and readily available precautions.

6. A white miner 25 years old, with 10 years' mining experience, was killed by a fall of roof. He was unmarried.

The deceased was instantly killed while undermining coal in a crosscut being driven from his room. The room was reasonably well timbered, but timbers were set in a semicircle around the breakthrough. A slip or horseback 8 feet by 4 feet by 10 inches thick fell on the miner. If the roof had been tested, it would have been found loose, and two timbers would have supported the rock. Standard timbering, closer examination by miner, and closer examination and supervision by foremen are recommended.

This description places the responsibility jointly on the miner and foreman; unfortunately joint responsibility is far too common, and as a result many persons are crippled or killed.

7. A miner was killed by a fall of slate in an entry.

The State law requires that the operator notify the State Division of Mines when a fatal accident occurs and that the mining division investigate all fatal accidents. No details of this accident were furnished by the mining company, and no investigation was made by the State Division of Mines.

8. A white miner 57 years old, with 25 years' mining experience, was killed by a fall of slate at the robbing face in an entry. He was married.

Robbing, had timbers close to face; 3-foot by 3-foot by 6-inch piece of apparently sound slate broke, fell around timbers, and killed him.

There are not enough data on this accident to permit definite comment; one would infer that the person making the report considered the accident largely unavoidable.

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9. A white machine helper 34 years old, with 5 years' experience in the mines, was killed by a fall of rock. He was married and had 4 children.

The machine was cutting across the face of a room when the roof fell, killing the machine helper.

A machine crew should not cut a place if the roof is not safe and cannot be made safe. In all probability timbers set behind the machine as it cut across the face would have prevented this accident. Machinemen particularly are inclined to take undue chances with roof conditions, and in consequence their occupation is considered extra-hazardous though usually there is no good reason why these workers cannot protect themselves adequately by expending a little time and effort other than in making cutting records.

10. A white miner 44 years old, with 1 month's experience in mining, was killed by a slate fall. He was married.

The deceased was working alone and had been instructed to set a timber under a bad piece of slate. It looked as though he had just entered his place when the slate fell on him.

Closer supervision by the foreman or compliance with instructions by the miner in all probability would have prevented this accident. The foreman should not have left a miner with 1 month's experience alone to set timbers under loose top.

11. A white driver 45 years old, with 25 years' mining experience, was killed by a slate fall. He was married and had 5 children.

Unforeseen accident. Deceased entered room for loaded car, leaving mule on the entry, and while driver was passing the car, slate fell on him and car, killing him.

Posts with crossbars would have prevented this accident, that is, there should have been systematic timbering and closer supervision. This type of accident occurs far too frequently and is the direct result of inadequate supervision of safety conditions on haulage roads.

12. A miner was killed by a fall of slate.

Two men in mine, which was not worked after the accident.

The data are too meager to permit adequate comment as to the probable underlying cause.

13. A white miner 62 years old, with 20 years' mining experience, was killed by a fall of coal from the rib. He was married and had 1 child.

The accident was due to the deceased's own carelessness. He had fired a shot and went back to load the coal without noticing the overhanging top coal which fell on him, causing his death.

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Although the information indicates that the miner was responsible for his own death, he might have been more cautious with proper training and supervision; moreover the surrounding conditions may have been such that only part of the blame rests on his shoulders.

14. A white miner 45 years old, with 3 months' mining experience, was killed by a fall of slate. He was married and had 7 children.

> There was no safety post set, and a horseback fell without warning, killing the miner.

This accident resulted from insufficient timbering and inadequate supervision; here, again, responsibility is divided. Unquestionably many mines should be supervised far more effectively than they actually are.

15. A white hostler 22 years old was killed by a fall of slate. He was unmarried.

No other information is available in connection with this fatality.

16. A white machine runner 22 years old, with 5 years' mining experience, was killed by a fall of slate. He was married and had 1 child.

> Slate 19 feet by 8 feet by 8 inches, with 3 sides loose, fell, killing the machine runner. There was supposed to have been one post under the rock, but this is doubtful. This fall also injured the machine helper.

Again, the machine crew did not protect themselves while cutting a place, and the men probably were more intent on cutting the place quickly than on taking precautionary measures to protect their own lives.

17. A white motorman 22 years old, with 1 year's experience in mining, was killed by falling slate.

> The deceased was removing crossbars, and two bars broke and roof fell, killing him.

Removing timbers is a dangerous practice, but the persons doing such work usually can protect themselves if they really try. Apparently a man with only 1 year's experience was assigned to far too dangerous a task, because removing timbers of any kind in a coal mine is one of the most hazardous kinds of work in coal mining and should be entrusted only to careful experienced miners.

18. A white miner 26 years old, with 2 years' mining experience, was killed by falling slate. He was married and had 3 children.

> A "kettle bottom" with no timber under it fell, crushing the miner. This is one of those accidents that just happen. The safety post was within 1 foot of the edge of the rock that killed him.

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Although kettle bottoms present very difficult problems in safeguarding coal miners, yet a definite timbering system affords fairly adequate protection.

19. A white miner 25 years old, with 1 month's mining experience, was killed while pulling draw slate. He was married.

Deceased was working in room with bad top and no safety post. This rock also injured another miner.

Here, again, the information is too meager to permit accurate comment, but unquestionably negligence and inadequate supervision contributed.

20. A miner 43 years old was killed by falling slate.

An unavoidable accident. The deceased was robbing in coal 9 feet thick, the place was properly timbered, but due to weight, a rib roll of coal and slate caught and killed the miner. This is apparently one of those accidents which just happen.

If timbers will not give the proper protection to workmen while withdrawing pillars a coal pillar should be left for protection, and if the region is so badly broken that adequate safety measures cannot be taken the region should not be worked.

21. A white miner 35 years old, with 10 months' mining experience, was killed by falling slate. He was married and had 5 children.

The accident occurred at 12:15 p.m. The place had been visited by the foreman at 8:15 a.m. and deceased instructed to set a safety timber. The timber was not set, and the rock which killed him was 6 feet by 1 foot by 18 inches thick.

In this instance supervision failed, and the victim paid in full for his negligence and for defiance of instructions and breach of discipline.

22. A white miner 20 years old, with 6 months' experience in mining, was killed by falling slate. He had been married only 1 week.

The accident is a result of carelessness and violation of the rules.

Slate 7 feet 10 inches by 6 feet 6 inches by 10 inches thick, with slips on 3 sides and held at 1 corner, fell, killing the miner. I am reasonably sure there were no timbers under the rock, and also certain that 1 timber would have held it. The foremen are not enforcing the timbering rules.

This accident resulted from failure of the miner to protect himself and from inadequate supervision.

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23. A white miner 62 years old was killed in a room break-through by falling slate. He was married and had 4 children.

Working in a break-through between No. 1 room and first left air course, the deceased was lying down working out the last cut in the break-through when slate 12 feet by 10 feet by 2 feet thick fell on him. The room was well-timbered, but in all probability there were no timbers in the break-through.

The miner failed to protect himself, and the foreman allowed a break-through to be driven without being properly timbered - another instance of negligence by the victim and of defective supervision.

24. A miner was killed by falling slate.

Horseback 17 feet by 9 feet fell, crushing deceased. The room was well-timbered outby face.

The responsibility lies with the miner for not properly timbering and with the supervisor for not having the necessary timbers set - a repetition of numerous other instances of negligence by the victim and of inefficient supervision by the operating offender.

25. A white miner 40 years old was killed by falling slate. Additional data are not available on this accident.

26. A white miner 40 years old was killed by falling slate. He was married and had 4 children.

This mine was closed in February on account of not having a certified foreman. In March the son of the original operator was robbing pillars when slate fell on him, causing his death 4 days later.

Evidently the accident was due to negligence.

27. A white miner 52 years old was killed by falling slate. Other information is not available on this accident.

Haulage

1. A white miner 43 years old, with 20 years' mining experience, was run over and killed when a trip of loads broke loose. He was married and had 3 children. Additional information is not available on this accident.

2. A white miner, 54 years old was run over and killed by an electric locomotive. He was married and had 1 child.

The deceased was walking into work on the main entry when he was overtaken, run over, and killed by a motor.

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Man-trips were not operated, and a manway was not provided; therefore the men walked along the main haulage. The accident was due to lack of control of locomotives or to improper supervision; the victim also may have been negligent. A man-trip or a manway would have prevented this accident.

3. A white pumpman 26 years old, with 3 years' mining experience, was run over and killed by an electric locomotive. He was married and had 2 children.

> Deceased was riding on front end of motor when his foot in some way slipped, causing him to fall in front of the motor. The motorman could not stop and ran motor up on him, fracturing skull, arm, and leg, from which he died 2 days later. At the point of the accident on the entry the entry was 4½ feet high and 13 feet wide. There was a 2-foot clearance on the side opposite the trolley wire. The wire was 48 inches above the rail.

Although many (probably most) mining companies allow certain employees in addition to haulagemen to ride on locomotives in mines, the practice is by no means a safe one.

4. A white coupler 27 years old, with 6 or 7 years' mining experience, was killed while rerailing a wrecked mine car. He was married and had 2 children.

> Mine car wrecked, coupler placed a 4-inch by 6-inch tie to rerail the car, and when the motor pulled, the car slipped off the tie, catching the coupler between car and rib, causing internal injuries from which he died 6 days later. This was carelessness for an inexperienced coupler.

Rerailers should be provided for putting wrecked cars back on the track, and the person placing them should get out of the way before the cars are moved.

5. A white coupler 39 years old, with 1 year's mining experience, was killed when caught between loaded car and roof. He was married and had 5 children.

> The grade made on the haulage made it necessary to double the trip. The deceased jumped between the cars while the trip was in motion to cut the rear half of the trip off. In getting on the trip it is assumed that his head hit the roof, and he was rolled between top of loaded car and roof. The entry is 46 inches above the rail and 12 feet wide. It is recommended that trips be stopped before they are uncoupled.

The inspector's recommendation to stop trips before attempting to uncouple them no doubt would have prevented this accident; haulagemen are prone to take chances; they should be given careful instructions as to safe procedure in their work, and the instructions should be rigidly enforced.

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6. A night foreman 33 years old, with 2 weeks' foremanship experience, was caught between car and rib, causing internal injuries which resulted in his death. He was married and had 3 children.

> Night foreman, acting as coupler, jumped from motor to close door and was rolled between car and rib. The clearance was not sufficient to clear man between car and rib. The door should have been closed by turning latch from motor.

A ventilating door should never be fastened, but held open. Adequate clearance should be provided where men get off trips to open doors; and certainly no underground employee should be allowed to jump off moving haulage equipment in mines except in an emergency to save his life. Jumping on and off moving cars and locomotives in mines is common practice but is extra-hazardous and is absolutely unnecessary in the normal working of mines.

7. A white coupler was injured by wrench between locomotive and roof, causing his death.

> The deceased made up a trip of 17 cars and got on the front end of the motor. The trip had just started when the motorman heard the coupler say "Stop." The trip was stopped, and it was found that a bell wrench in the coupler's pocket had ruptured an artery in his abdomen, causing his death. It is presumed the wrench forced him against the roof, which was 20 inches above bumper and 5 inches above top of motor.

The front end of a mine locomotive is a very unsafe place on which to ride.

8 and 9. Two miners, one 17 and the other 23 years old, were killed when a man-car rope broke.

> These men were told by the hoistman not to get on the car because the hoist drum was not safe. Four men got on the car as it was being lowered, the drum broke, breaking the ½-inch hoist rope, and the car ran down the surface incline, killing 2 men and injuring 2 others.

If the hoist drum was known to be unsafe the car should not have been moved; this apparently is a clear case of disobedience by workers and of lack of discipline and of supervision by the operator.

Electricity

1. A white laborer 22 years old, with 2 years' mining experience, was electrocuted. He was married and had 1 child.

> The motorman and laborer, working as a coupler, were loading and hauling slate from the mine to the surface. It was necessary

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for the locomotive to stop while the foreman and trackman put in a rail. The motorman and deceased decided to eat lunch, the motorman against the rib and the laborer on the locomotive. While eating, the deceased came in contact with the trolley wire. The motorman, foreman, and trackman gave artificial respiration, but the victim probably died from strangulation. The wire is 51 inches above the rail, and the locomotive 33 inches high.

A man should not use a locomotive for such purposes, especially under such low top. The foreman who was only 50 feet away should not have allowed the laborer to sit on the locomotive to eat lunch. The wire was less than 6 feet above the rail and should have been shielded. Before artificial respiration was attempted all foreign objects should have been removed from the mouth.

2. A white surface or tipple motorman 28 years old, with 4 years' mining experience, was killed by coming in contact with a 250-volt trolley wire. He was married and had 2 children.

Deceased was standing, one foot in the deck and the other on the bumper of the locomotive, with his back in the direction of motion. He was backpoling, and his clothing was wet. His shoulder contacted the trolley wire. Artificial respiration was given for 2 hours without success.

Standing in and on a locomotive with the back in the direction of motion is a very unsafe combination for locomotive operation; backpoling is also unsafe and usually unnecessary.

3. A white trackman 22 years old, with 5 years' mining experience, was electrocuted by coming in contact with a 250-volt trolley wire. He was married and had 3 children.

The deceased contacted the trolley wire with his neck as he was stepping into the deck of the locomotive. Artificial respiration was given 1 hour and 15 minutes without success.

A low, unshielded trolley wire at the intersection of two entries caused this accident; these trolley-wire accidents indicate the desirability of having the trolley wire shielded at all points where less than 6½ or 7 feet above the track rail.

Explosives

1. A white miner 22 years old with 5 days' mining experience, was killed by using short fuse with explosives. He was married and had 2 children.

The deceased placed a 2-foot fuse in a stick of pellet powder, lit it, and then with a tamping bar pushed it back in a 6-foot shot hole. Evidently the bar forced the lighted end of the fuse against

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the charge, as the explosion occurred before the bar was removed. The flying coal killed one man and injured another. Suicide.

Ignorance and lack of training and supervision contributed to this accident; moreover, the use of pellet powder is unsafe in any mine, and short fusing is anything but safe and apparently must have been more or less the usual practice in this mine.

Mine Fire

1. A white slate loader 25 years old, with 1 month's mining experience, was overcome by smoke and gas from a mine fire and fell on the haulageway, and a locomotive ran over him.

The deceased was loading slate near a mine fire. After being overcome by smoke and gas, and probably dead, a locomotive ran over him.

It certainly is a reflection on the supervisory force to place a man with 1 month's mining experience where he could breathe the return air from a mine fire.

Machinery

1. A white ash roller 24 years old, who had been at work for 3 months, was scalded to death by steam and hot water. He was married and had 1 child.

The deceased was working in the ash pit of a steam boiler plant when the "L" on the blow-off valve to the boiler broke, and the steam and hot water ran into the ash pit, causing his death.

This accident might have been prevented by proper boiler inspection.

Falls of Persons

1. One white and one colored miner and four other workmen were killed when a scaffold on which they were working in the construction of a tipple collapsed.

There were 24 men constructing a tipple. At the end of the previous day the construction engineer inspected the structure and was satisfied with its condition and progress. It was inspected an hour before the accident and pronounced safe. While placing the permanent braces, No. 6 bent began to fall, due to loosened guy wires, and knocked the other five bents, with the scaffolds, down.

The guy ropes are said to have been loosened intentionally; if this is a fact this accident should be termed "multiple murder."

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NONFATAL COMPENSABLE ACCIDENTS

Haulage

During the 3-year period 22 compensable nonfatal accidents causing 8 or more days lost time and a number of partial permanent disabilities were charged against haulage.

These accidents were due to various causes, such as coupling cars while in motion, being caught by wrecked cars or trips, rerailing wrecked cars, blocking or scotching cars, and being caught between car and timbers or ribs; other causes accounted for a few accidents.

The changes or improvements that would reduce materially the frequency of haulage accidents are:

1. Repairand aline mine tracks
2. Repair mine cars and locomotives.
3. Provide rerailers and require their use.
4. Provide necessary clearance.
5. Provide adequate supervision.
6. Train all employees in accident prevention.

Pushing Mine Cars

Pushing mine cars caused only 28 accidents during the 3 years, but this practice is so closely related to the occurrence of accidents of considerable severity, such as strained back, hernia, and rupture, that it deserves serious consideration.

In some Tennessee mines, empty and loaded cars must be pushed excessive distances, over undulating floors; such practice results in far too many accidents. The remedy is obviou.

Handling Material

Ninety-four accidents were attributed to handling material, largely dropping coal or slate on toes and catching hands between coal or slate and cars. These accidents could be reduced at least 50 percent by the use of safety shoes.

Flying Objects

Ninety percent of the 42 accidents from flying objects were due to coal or slate in eyes. These could be virtually eliminated by the use of goggles; some mining companies now require the use of goggles with lenses to correct defects of vision and thus eliminate not only eye but also numerous other types of accidents through improved vision of the workers.

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Other Causes

Other causes of accidents were: Tools, 41; falls of persons, 38; machinery, 34; electricity, 14; explosives, 8; gas ignitions, 6.

Accidents from all these causes could be reduced by closer supervision and by properly selecting, placing, and training employees.

SUMMARY

The fatal as well as the nonfatal accident rate for Tennessee coal mines is better than the average rates for the United States. This record is no reason, however, for not improving the accident experience or for allowing it to be poorer in the past 10 years than in the previous decade. Compared with other mining States, natural conditions in Tennessee favor safe operation: Few mines liberate explosive gases; virtually all coal mined is above water level, and little pumping is required; the coal cover on the average is not excessive, enabling a high percentage of recovery at relatively low cost for roof support; and, with exceptions, roof conditions are fair to good.

CONCLUSIONS

To improve accident experience or reduce accidents in Tennessee coal mines operators, miners, and the State Division of Mines must cooperate.

Operators should put their mines on the most efficient operating basis possible, that is, a safe operating basis. They should formulate a set of safety and operating rules and provide the supervisory force necessary to enforce them. The operators should provide the necessary training; employees thus trained will usually be careful and efficient.

Employees, workmen, or miners should cooperate with employers in reducing accidents to the extent of conforming to the safety and operating rules and availing themselves of all possible training, such as first aid, mine rescue, and accident prevention, and attendance at regular safety meetings, which will enable them to become safer and more efficient workers.

The State Division of Mines of the Department of Labor should employ an adequate number of district inspectors to make thorough and complete examinations of all mines in the State at least every 60 days and forward reports of such inspections to the chief of the Division of Mines, who will forward copies with his recommendations to operating heads of companies and to superintendents or mine foremen. These recommendations should be later followed by inspection to see that they are carried out.

The State Inspection Division should investigate each fatal and serious accident as soon as practicable after its occurrence and send a report placing the responsibility and recommending ways of preventing similar accidents to the operating head of the company and superintendent or foreman of the mine concerned.

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